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Compatibility Test for Herbicides and Liquid Fertilizer

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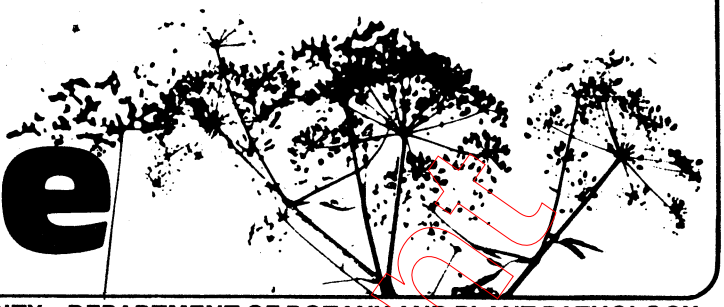
weed science



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COMPATIBILITY TEST FOR HERBICIDES AND LIQUID FERTILIZER

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Introduction

There are cases where you would want to apply your soil-applied herbicides as a tank mix with liquid fertilizer. This is a quick and easy way to apply both chemicals with one trip over the field. However, not all soil-applied herbicides are labeled for application in this manner, so care should be taken to read the herbicide label to see if a particular herbicide is cleared for use with liquid fertilizer. Instructions on the actual herbicide label should always be carefully read and followed. While the information given here is accurate, it does not replace the product label.

In many cases a compatibility agent (adjuvant) is needed to make a uniform dispension of the two types of chemicals to prevent them from separating out in the spray tank. Some herbicides will not mix with liquid fertilizer even when a compatibility agent is added. This separation of the compounds is referred to as "incompatible."

A simple test can determine whether a herbicide will be compatible with liquid fertilizer. This test was developed for testing the compatibility agent, Unite, but should work for any compatibility agent with 75 percent or more active ingredients. Three methods can be employed to determine compatibility of herbicides with liquid fertilizers. Methods I and II are applicable for most situations, while Method III is suggested where compatibility problems arise because of application of two or three different pesticides through a single source of liquid fertilizer. Method III is also recommended for mixtures involving high phosphate grade liquid fertilizer (6-18-6, 9-18-9, 7-23-5, 10-34-0) and flowable pesticide formulations. Wettable powders should be premixed or slurried in water or fertilizer before adding to the fertilizer tank.

Procedure to Determine Compatibility

Method I:

1. Add 1 pint of liquid fertilizer to each of two glass quart jars.
2. Add 1/4 teaspoon of the adjuvant to one jar.
3. Add the required amount of herbicide (see Tables 1 and 2) to each jar.
4. Invert the jars several times to mix the chemicals; then allow them to stand for 30 minutes.
5. Compare jars, observing for uniform dispersion. Dispersion should remain uniform for 30 to 60 minutes.

If the jar without the compatibility agent remains despersed, then no additional adjuvant is needed. If neither jar has sufficient compatibility, then repeat the test using 3/8 teaspoon of adjuvant. If the compatibility is still not sufficient, then use method II.

Method II:

1. Add 1 pint liquid fertilizer to a glass quart jar.

2. Add 1/4 teaspoon of adjuvant to the liquid fertilizer and mix thoroughly by inverting the jar several times.

3. Follow steps 3 through 5 in Method I.

If the compatibility is not sufficient repeat method II using 3/8 teaspoon of adjuvant. If the compatibility is still not sufficient, use Method III.

Method III:

1. Fill the jar with 1 pint of liquid fertilizer.

2. Prepare a premix of adjuvant and herbicide. Add immediately to the liquid fertilizer and mix the contents by inverting the jar several times.

If the compatibility is not sufficient repeat Method III, using 3/8 teaspoon of adjuvant. If the compatibility is still not sufficient after using each of three methods, assume that the compounds are not compatibile and should not be used as a tank mix.

Table 1. Guidelines for liquid herbicide rates for compatibility test

Gallons of liquid fertilizer applied/A	Teaspoons of liquid herbicide per pint of liquid fertilizer		
	(1 qt/A)	(2 qt/A)	(4 qt/A)
10	2.4	4.8	9.6
20	1.2	2.4	4.8
40	0.6	1.2	2.4
60	0.4	0.8	1.6
80	0.3	0.6	1.2
100	0.2	0.5	1.0

1 teaspoon = 4.93ml

Table 2. Guidelines for wettable powder herbicide rates for compatibility test

Gallons of liquid fertilizer applied/A	Teaspoons of wettable powder herbicides per pint of liquid fertilizer		
	(1 lb/A)	(2 lb/A)	(4 lb/A)
10	3.5	7.1	14.2
20	1.8	3.5	7.1
40	0.9	1.8	3.5
60	0.6	1.2	2.4
80	0.4	0.9	1.8
100	0.3	0.7	1.4

Table 3. Guidelines for compatibility agent (adjuvant) rates

Pints of adjuvant per 100 gallons	Teaspoons per pint liquid fertilizer
1	1/8
2	1/4
3	3/8
4	1/2

1 teaspoon = 4.93ml